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"Enhancement and Acceleration on Research and Learning in Mathematics and Natural Sciences for the Utilization of Natural Resources"

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Screening Bioactive Compound of Stem Bark Soursop *(Annona muricata Linn)* Potential For Anti-Cancer

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Abstract. Plant soursop (*Annona muricata* Linn) is a species of the genus Annona including Annonaceae family that has long been used by traditional communities for treatment and food, such as soursop leaves can be efficacious for the treatment of cancer, the treatment of diarrhea, anti-convulsive, anti-fungal and itchy. The purpose of this study was to isolate and purification of secondary metabolites from the bark of the soursop hexane fraction. 453 g of the methanol extract and yield 12.1 g hexane fraction from the bark of the soursop. In the isolation and fractination with column chromathography and toxicity test against larvae of shrimp *Artemia salina.*

Key words : soursop, *Annona muricata* Linn , fitosteroid, toxicity

INTRODUCTION

Approximately 54% of all the world's plant species found in the tropical forests in seven countries, including Indonesia. Of the 250,000 species of higher plants found in the world and is expected to grow to 30,000 species throughout the islands in Indonesia (Ahmad, 1999). Of the thousands of species of higher plants is still very little known chemical content, whereas more than 25% of prescription drugs that are used today contain bioactive ingredients derived from higher plants (Tukiran, 1997). Development of medicines of natural materials is very advantageous because tropical plants believed to have the ability to manipulate a wide variety of chemical compounds that have a variety of interesting bioactivity. The ability of one of them caused by a self-defense mechanism against the environment, because in general these plants live under harsh environmental conditions both climatic factors and disorders of herbivores, insects and pests. Tropical plant can produce a natural chemical compounds that have the potential as pesticides, insecticides, antifungal and cytotoxic effect.

One family of plants that have the potential as a source of bioactive chemicals and a relatively large number is Annonaceae which consists of 20 genus with more than 40 species and genus of the family's primary is Annona. Besides this family showed insecticidal activity, anti-tumor and antifungal based on research of some species of the genus Annona, Polyalthia, Uvaria

and Xylopia (Mahmiah, 2006). Luna *et.al.*(2006) reported that *A. muricata* leaves extract with polar solvent showed the toxicity to larvae of the brine shrimp Artemia salina with LC_{50} 0,49 μgmL^{-1}.

Based on the description above, the problems that can be formulated are secondary metabolites are contained in the bark of *Annona muricata* L potential as anticancer and to know its toxicity to larvae of the brine shrimp Artemia salina with non polar solvent.

RESEARCH METHODS

Plant material used in this study is the bark of the soursop (*A. muricata* Linn) were collected in March 2015 obtained from Pinrang South Sulawesi. Solvent for extraction and chromatography used p.a quality and technical distilled beforehand, namely: n-hexane, chloroform, ethyl acetate, acetone and methanol. Vacuum column chromatography performed using a Si gel 60 GF 254, flash column chromatography / gravity column chromatography on silica gel Merck 60 (230-400 mesh), silica gel rough for impregnation Merck 60 (35-70 mesh), and thin layer chromatography analysis conducted by Si gel-coated plates Merck Kieselgel 60 F254 0.25 mm. Cerium sulfate solution 1.5% in 2N sulfuric acid is used to reveal the stain. To test BST used dimethyl sulfoxide (DMSO), and shrimp seed A.salina.

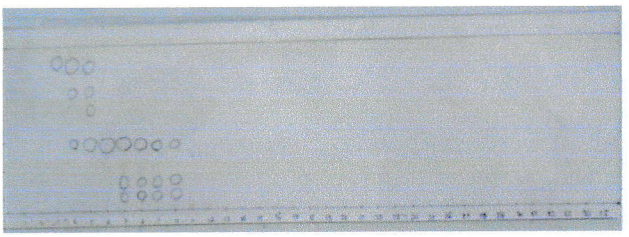
The tools used in this study are: a set of distillation equipment, Buchner funnel, TLC chamber, a capillary tube, a tool for fractionation include vacuum column chromatography, press column chromatography and gravity column chromatography. Then some equipment such as: analytical balance, evaporator and means of determining the melting point is determined by the "micro melting point apparatus". Besides test the bioactivity of extracts and pure compounds were obtained, used tools such as: micropipette, micro plate, lamps for lighting, and shrimp fry hatching container. As well as tools and media that supports the biological test toxicity against A. salina.

A total of 5 kg of dry weight of the bark of the soursop pulverized and then macerated with methanol for three times in 24 hours (until approx extract of secondary metabolites were all out). The brown maserate filtered using a Buchner funnel with Whatman paper and then evaporated using a rotary evaporator to obtain a methanol extract is then determined by weight.

Furthermore, the methanol extract was partitioned by means of liquid-liquid extraction with n-hexane. Hexane fraction obtained were then fractionated again with column chromatography with an appropriate eluent by TLC analysis, the same Rf value combined then evaporated to dryness. Furthermore isolates obtained is then purified by means of crystallization / recrystallization to get a single stain on TLC test with a variety of eluent and measuring the melting point.

RESULTS AND DISCUSSION

Extraction and Isolation. A total of 5 kg of dry weight of the bark of the soursop mashed then macerated with methanol for 3x24 hours. Maserat obtained was concentrated by using a rotary evaporator and the obtained methanol extracts as much as 453 grams. Extract total partitioned with n-hexane and hexane fraction obtained as much as 12.1 grams. Hexane fraction further fractionated by column chromatography using a vacuum and after fractionation on TLC and then the results is combined into six major factions.



Chromatogram Fraction Results KKV
Eluent Ethyl Acetate: n-hexane (1: 9)

The fourth fraction from the vacuum column chromatography (VCC) (2,015gr) further separated by flash column chromatography (FCC) with the same eluent as above VCC process isolates obtained white. Furthermore, the crystallization with chloroform acetone to obtain a white crystal weighing 61.1 mg and then recrystallized produce as much as 19.8 mg white crystals with a melting point of 121°C. Based on the TLC test with variations of three different eluent still earned a single spot thus concluded the compound (1) is pure. Based on the test results Lieberman Burchard compound (1) bluish green indicates steroid.

Bioassays. Toxicity tests carried out on the hexane extract using *Artemia salina* shrimp fry in accordance with the method of Meyer *et al*, 1982 and shows the value of LC_{50} = 65,61µg mL^{-1}.

CONCLUSION.

Based on the results of the study indicate LC_{50} values of the hexane extracts of the bark of A. muricata Linn each 65. 61μg mL^{-1}. Also obtained compound (1) color white crystals with a melting point of 120° - 121°C and included in the steroid.

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CERTIFICATE

This is to certify that

Dr. Pince Salempa, M.Si.

Has participated on

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